

What is claimed is:

1. A radio wave lens antenna comprising:

5 a hemispherical radio wave lens for focusing radio wave beams;

a reflective plate attached to a half-cut surface of the sphere of the radio wave lens for reflecting radio waves incoming from the sky or radiated toward targets; and

10 primary feeds positioned at arbitrary radio wave focus points of the radio wave lens for transmitting or receiving the radio waves,

wherein each primary feed includes a dielectric-loaded waveguide antenna where a dielectric body is loaded at an end opening of a waveguide and the primary feeds are
15 installed adjacently.

2. A radio wave lens antenna comprising:

a spherical radio wave lens for focusing radio wave beams; and

20 primary feeds positioned at arbitrary radio wave focus points of the radio wave lens for transmitting or receiving the radio waves,

wherein each primary feed includes a dielectric-loaded waveguide antenna where a dielectric body is loaded at an
25 end opening of a waveguide and the primary feeds are installed adjacently.

3. The radio wave lens antenna of claim 1 or 2, wherein the dielectric-loaded waveguide antenna is a dielectric-loaded rectangular waveguide antenna where the dielectric
5 body is loaded at the end opening of a rectangular waveguide.

4. The radio wave lens antenna of any one of claims 1 to 3, wherein the dielectric body of the dielectric-loaded waveguide antenna is protruded forward from the waveguide
10 and a protruded portion of the dielectric body is of a taper shape having a thinned end.

5. The radio wave lens antenna of claim 4, wherein a center of the end of the dielectric body is at a position
15 located off the extension of a waveguide's center axis and the end of the dielectric body is of a non-rotational symmetrical shape.

6. The radio wave lens antenna of any one of claims 1 to 3, wherein the dielectric body is protruded forward from the waveguide and a part of an outer periphery of a protruded
20 portion of the dielectric body is removed along a plane of a direction intersecting a cross section of the waveguide.

7. The radio wave lens antenna of any one of claims 4 to 6, wherein in a plane including a cross section of the

protruded portion of the dielectric body protruded forward from the waveguide, a dimension of the protruded portion in a disposed direction of the primary feeds is smaller than that in a direction normal to the disposed direction of the primary feeds.

8. The radio wave lens antenna of any one of claims 4 to 7, wherein an end of the dielectric body protruded from the waveguide is cut out such that the end of the dielectric body is of flat or a round shape.

9. The radio wave lens antenna of any one of claims 1 to 8, wherein the dielectric-loaded waveguide antenna is a choke structure antenna with an annular groove around a front surface of the waveguide.

10. The radio wave lens antenna of any one of claims 1 to 3, wherein the dielectric-loaded waveguide antenna is an antenna of a structure having a convex lens-shaped dielectric body loaded at the end opening of the waveguide.